



DEPARTMENT OF COMMERCE

National Institute of Standards and Technology

Gas Flow Meter Calibrations

AGENCY: National Institute of Standards and Technology (NIST), Commerce.

ACTION: Notice of workshop; request for comments.

SUMMARY: The National Institute of Standards and Technology (NIST), an agency of the United States Department of Commerce, is examining the economic impact and continued need for gas flow calibration services as provided to U.S. industry by the Fluid Metrology Group on NIST's campus in Gaithersburg, Maryland. NIST is also interested in whether there is a need for gas flow meter calibration services not presently offered by NIST. NIST publishes this notice to announce a workshop that will guide NIST planning for the future of its gas flow calibration capabilities, and to request comments on government and industry interest in and needs for (1) gas flow calibrations and whether the present services are meeting those needs, (2) new gas flow calibrations and standards not presently available from NIST, and (3) calibrations and standards for multiphase flows. This is part of the effort to systematically review NIST's Measurement Services to assess gaps and ensure alignment with stakeholders' needs as discussed in the Government Accounting Office report GAO-18-445.

DATES: NIST will accept written responses to this request for information until 11:59 p.m. Eastern Time on September 16, 2022. Submissions received after that date may not be considered. All submissions, including attachments and other supporting materials, may become part of the public record and may be subject to public disclosure. NIST reserves the right to publish relevant comments publicly, unedited and in their entirety. Personal information, such as account numbers or Social Security numbers, or names of other individuals, should not be included. Do not submit confidential business

information, or otherwise sensitive or protected information. Comments that contain profanity, vulgarity, threats, or other inappropriate language or content will not be considered.

A public workshop will be held on Wednesday, September 7, 2022, from 1:00 p.m. to 4:00 p.m. Eastern Time, virtually by web conferencing. Interested parties must register to participate in the public workshop by 5:00 p.m. Eastern Time on Tuesday, September 6, 2022, and may register by sending an e-mail to john.wright@nist.gov prior to 5:00 p.m. Eastern Time on Tuesday, September 6, 2022.

ADDRESSES: Comments should be submitted to Dr. John Wright, Sensor Science Division, Physical Measurement Laboratory, National Institute of Standards and Technology, 100 Bureau Drive, Mail Stop 8361, Gaithersburg, Maryland 20899, or by electronic mail to john.wright@nist.gov. Individuals or groups interested in touring the gas flow standards in person are welcome and can schedule tours by writing to the email address, john.wright@nist.gov, before or after the workshops.

FOR FURTHER INFORMATION CONTACT: Mail: Chief, Sensor Science Division, Gas Flow Calibrations, 100 Bureau Drive, Mail Stop 8440, Gaithersburg, Maryland 20899. Email: John Wright at john.wright@nist.gov. Phone number: 301 975-5937.

SUPPLEMENTARY INFORMATION: NIST's gas flow standards use the pressure, volume, temperature, and time (PVTt) method and working standard flow meters to conduct research and perform customer calibrations at flows ranging from 0.1 cm³/min to 4×10^4 m³/min with uncertainties as low as 0.025 %. The smaller flows in this range are used by the semiconductor, pharmaceutical, and aerospace manufacturing sectors. The largest flows in the range are performed using high pressure natural gas to support reliable trade of this fuel. More information on NIST's gas flow standards and print

publications about them can be found at <https://www.nist.gov/laboratories/tools-instruments/gas-flow-standards>.

NIST is seeking to better understand the impact of its gas flow calibrations on the U.S. economy, manufacturing infrastructure, and technological base, and whether the magnitude of this impact necessitates that NIST should: expand or reduce the calibrations offered; expand the variety of gases used in calibrations beyond nitrogen, noble gases, and natural gas to include semiconductor gases and other hazardous and corrosive gases; and/or improve the uncertainties of the present calibrations.

To measure the impact of NIST gas flow calibration services on the U.S. economy and U.S. manufacturing, NIST welcomes information about the “leverage” of NIST calibrations (i.e., cases where a few instruments calibrated by NIST are subsequently used by a commercial laboratory or a flow meter manufacturer to provide traceability and accuracy for a large number of instruments) and “impact” of NIST calibrations (i.e., cases where a single calibration has a major impact on a specific commercial, technology, or government application or project).

The following list of topics covers the major areas about which NIST is seeking comments. The listed areas are not intended to limit the topics that may be addressed by respondents so long as they address a topic that would be useful in NIST’s planning relative to our offerings of gas flow calibrations. When addressing the topics below, respondents may describe the practices of their organization or organizations with which they are familiar. Providing such information is optional and will not affect NIST's full consideration of the comment.

Topics of Interest:

1. Which NIST gas flow calibrations you have purchased, if any, including:

- a. If you have purchased calibrations from NIST, whether you purchased from NIST due to convenience, accuracy, cost, customer service, regulatory requirement, or some other reason;
 - b. If NIST was to terminate the calibration service(s) you presently use, whether you have another source lined up that would meet your requirements; and
 - c. Whether it would pose a problem to your organization if the calibration service was not available at NIST.
2. How NIST calibration results are applied in your organization, including numerical examples of “leverage” to assess the economic impact of NIST flow calibration services. For example: “Three working standard flow meters periodically calibrated by NIST are the source of calibration traceability for 2,000 flow meters manufactured at our facilities,” or “Proficiency testing allows ISO 17025 accreditation of our calibration capabilities that are applied to \$1M worth of products annually.”
3. Whether flow calibrations in your organization are traceable to NIST, including:
 - a. Whether you refer to NIST flow publications or research to support your gas flow measurements; and
 - b. If not directly traceable to NIST, whether you know how your flow measurements compare to NIST flow standards (for example by comparison against a flow meter traceable to a NIST calibration).
4. Feedback on the cost, availability, turn-around time, business systems, and customer service provided by NIST gas flow calibration services.
5. Whether you purchase gas flow calibrations from another National Metrology Institute (NMI) or from another calibration laboratory, and your organization’s experience with this approach.

6. Your opinions about the range, uncertainty, quality and cost of the NIST gas flow calibration services, and whether there are specific, new flow calibration capabilities that NIST should consider offering to better serve your needs.

Possibilities include calibrations involving toxic semiconductor gases, multiphase flows, gas mixtures, smaller or larger flows, and wider temperature or pressure ranges. Details about flow ranges and uncertainties of interest, expected frequency of use of the service, and maximum price that you might be willing to pay for the service are also useful.
7. Whether you manufacture and sell gas flow meters or sell calibrations of such meters; if so, whether your meter flow values are traceable to NIST; and, if not NIST, whether you use a secondary laboratory, another NMI, or have your own primary standard(s).
8. Whether there are flow measurement research topics that are not presently being studied that you would like NIST to research, and the potential impact of such research on your organization.

Authority: 15 U.S.C. 272(b) & (c).

Alicia Chambers,
NIST Executive Secretariat.

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